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Research

Skin Biopsy Results of Geriatric Patients Over a 5-year Period and the Frequency of Skin Diseases Before and After COVID-19 Pandemic

Geriatrik Hastalarda 5 Yıllık Süreçte Alınan Deri Biyopsisi Sonuçları, COVID-19 Pandemi Öncesi ve Sonrasında Görülen Farklar

Dilek Bıyık Özkaya[1], Gamze Erfan[2], Yıldız Okuturlar[3], Zeynep Tosuner[4], Deniz Demircioğlu[5], Özgür Timurkaynak[2]

[1]Acıbadem University Atakent Hospital, Clinic of Dermatology, Istanbul, Turkey
[2]Acıbadem University Altunizade Hospital, Clinic of Dermatology, Istanbul, Turkey
[3]Acıbadem University Atakent Hospital, Clinic of Internal Medicine, Istanbul, Turkey
[4]Acıbadem University Atakent Hospital, Clinic of Pathology, Istanbul, Turkey
[5]Acıbadem University Maslak Hospital, Clinic of Dermatology, Istanbul, Turkey

ABSTRACT

Objective: The number of older adults has increased throughout the world. Aging affects all the organs and creates psychological, physiologic and anatomic changes. One of the most important organs of the human body is the skin, which shows the effects of aging the most. This study aims to determine whether age, gender, and season of biopsy play a significant role in skin biopsy results. Additionally, the study investigates whether the frequency of skin diseases differs before and after the coronavirus disease-2019 (COVID-19) pandemic.

Methods: We conducted a retrospective study on the histopathology results of patients over 65 years old between June 2016 and September 2021. The histopathology results were obtained from the Acibadem Pathology Department.

Results: Of the 677 patients, 310 (45.8%) were male and 367 (54.2%) were female. The most common disease in all patients were benign cutaneous neoplasms (23%), followed by eczematous disease (18.5%) and epithelial cutaneous cancers (16.8%). We divided the results into 12 groups: group 1: Urticaria, erythema and purpuras, group 2: Papulosquamous and eczematous diseases, group 3: Infectious diseases, group 4: Rheumatologic diseases and alopecia, group 5: Benign cutaneous neoplasms, group 6: Precancerous lesions, group 7: Basal cell carcinoma, squamous cell carcinoma, group 8: Cutaneous metastasis and other skin cancers, group 9: Pigmentation disorders, group 10: Pschycology related dermatological disorders, group 11: Granulomatous dermatitis, group 12: Bullous dermatitis. Before the COVID-19 pandemic, the most prevalent results were group 2 (21.3%), followed by group 5 (20.4%) and group 7 (16.7%) whereas, after the COVID-19 pandemic, the most frequent results were group 5 (28.4%) followed by group 7 (17.1%), and group 6 (14.9%). In terms of seasons, the most common diseases were group 5 (24.1%) in winter, group 2 (21.6%) in spring, group 5 (30.0%) in summer, and group 2 (18.9%) in autumn. Before the COVID-19 pandemic, the most common result was group 2 (21.3%), followed by group 5 (20.4%) and group 7 (16.7%), and during the COVID-19 pandemic, the most common result was group 5 (28.4%), followed by group 7 (17.1%), group 6 (14.9%).

Conclusion: Many skin diseases affect the geriatric population. Geriatric patients face challenges such as multiple drug use, comorbidities, mobility problems and cognitive disorders. In our study, the most common diseases in all patients were benign cutaneous neoplasms (23%), followed by eczematous diseases (18.5%), and epithelial cutaneous cancers (16.8%). Knowing about the frequency of skin diseases is critical for the early detection of precancerous and cancerous lesions.

Keywords: Skin, geriatric, skin biopsy, elderly, skin disease

Address for Correspondence: Dilek Bıyık Özkaya, Acıbadem University Atakent Hospital, Clinic of Dermatology, Istanbul, Turkey
Phone: +90 533 350 69 43 E-mail: dilekozkaya@gmail.com ORCID ID: orcid.org/000-0002-5003-5346

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ÖZ

Amaç: Tüm dünyada yaşlı nüfusta artış görülmektedir. Yaşlanma tüm organları etkilemekte ve psikolojik, fizyolojik ve anatomik değişikliklere sebep olmaktadır. Vücudumuzun en önemli organlarından olan deri yaşlanma etkilerinin en çok görüldüğü organlardan biridir. Bu çalışmada 65 yaş üstü hastalarda alınmış deri biyopsisi sonuçlarını incelemeyi, yaş, cinsiyet ve biyopsinin alındığı mevsimin hastalık sıklığına etkisi olup olmadığını araştırmayı amaçladık. Aynı zamanda koronavirüs hastalığı-2019 (COVID-19) pandemi döneminin biyopsi ile tanı konmuş hastalık sıklığına etkilerini araştırmayı amaçladık.

Gereç ve Yöntem: Haziran 2016 ile Eylül 2021 tarihleri arasında Acıbadem Üniversitesi Atakent Acıbadem, Maslak Acıbadem, Altunizade Acıbadem Hastaneleri Dermatoloji kliniklerine başvurmuş olan hastaların biyopsi sonuçları retrospektif olarak tarandı. Sonuçlar 12 grupta incelendi.

Bulgular: Biyopsi sonucu taranan 677 hastanın 310'u (%45,8) erkek, 367'si (%54,2) kadındı. Tüm hastalarda en sık rastlanan hastalık grubu benin deri tümörleriydi (%23). Sonrasında sırayla ekzematöz deri hastalıkları (%18,5) ve epitelyal deri kanserleri (%16,8) saptandı. Sonuçları 12 gruba böldük. Grup 1: Ürtiker, eritemli hastalıklar ve purpuralar, grup 2: Papüloskuamöz hastalıklar ve ekzematöz hastalıklar, grup 3: Enfeksiyöz hastalıklar, grup 4: Romatolojik hastalıklar ve alopesi, grup 6: Benin kutanöz tümörler, grup 6: Prekanseröz lezyonlar, grup 7: Bazal hücreli karsinom, skuamöz hücreli karsinom, grup 8: Kutanöz metastaz ve digger deri kanserleri, grup 9: Pigmentasyon bozuklukları, grup 10: Psikoloji ilişkili dermatolojik hastalıklar, grup 11: Granulomatöz dermatitler, grup 12: Büllöz hastalıklar. COVID-19 pandemisi öncesinde en sık rastlanan hastalık grupları 2 (%21,3), 5 (%20,4), 7 (%16,7) iken COVID-19 pandemi döneminde en sık rastlanan gruplar 5 (%28,4), 7 (%17,1) ve 6 (%14,9) olarak saptandı.

Sonuç: Geriatrik populasyonda birçok deri hastalığı gözlenmektedir. Geriatrik hastalarda çoklu ilaç kullanımı, eşlik eden komorbiditeler, hareket etmekteki sıkıntılar, bilişsel bozukluklar tanı ve tedavide zorluklara sebep olmaktadır. Çalışmamızda geriatrik hastalarda en sık görülen deri biyopsisi sonuçlarını benign deri tümörleri (%23), ekzematöz hastalıklar (%18,5) ve epitelyal deri kanserleri (%16,8) olarak saptadık. Geriatrik hastalardaki deri hastalıkları sıklıklarını bilmek prekanseröz ve kanseröz deri hastalıkları konusunda bilinçli davranmak ve geriatrik hastalara multidisipliner yaklaşmak konusunda önemlidir.

Anahtar Kelimeler: Deri, geriatrik, deri biyopsisi, yaşlı, deri hastalıkları

INTRODUCTION

The geriatric population is defined as people aged 65 and over. The number of older adults is increasing all around the world. The skin is a vital organ of the body. It covers all the surfaces of our body and provides a physical barrier. It has various functions such as protecting from losing water and electrolytes, protecting from infections, regulating the body temperature, feeling the touches, pressure, pain, itching by the nerves and sensory receptors. Skin aging occurs by intrinsic and extrinsic factors. Thinning of the epidermis and dermis, decrease in elastin and collagen fibers, decrease in vascularity and supporting structures in the dermis, impaired immune response, impaired neurologic responses, atrophy of sweat glands, decreased stratum corneum lipids, and a decrease in melanocytes are all signs of skin aging (1). Intrinsic aging is a natural process that occurs over time and is related to genetics. Over time, the function of keratinocytes, fibroblasts decrease, loss of telomeres, mitochondrial damage affects the intrinsic aging. Environmental factors affect our skin and can cause aging. UV, air pollution, smoking, sun exposure, poor diet, stress are the extrinsic causes of skin aging. Environmental factors cause free radicals, DNA damage, glycation, inflammation, and this causing cellular damage and skin aging (2). With the effects of intrinsic and extrinsic factors, dermal atrophy decreased collagen, decreased elasticity, due to increased melanogenesis pigmentation disorders, roughness, wrinkling, laxity of the skin occurs (3,4).

Aging affects all the organs and creates psychologic, physiologic and anatomic changes. Older patients have multiple diseases, such as diabetes, heart disease, hypertension and generally use multiple drugs (5). In this study, we investigated whether age, gender, and season play a significant role in skin biopsy results. Additionally, the study investigated whether the frequency of skin diseases differs before and after the coronavirus disease-2019 (COVID-19) pandemic.

METHODS

We retrospectively examined the histopathology results of patients over 65 years old between June 2016 and September 2021. The histopathology results were obtained from three centres: Acibadem University Atakent Acibadem, Maslak Acibadem, Altunizade Acibadem Dermatology clinics the age groups were divided into 3 groups: 65-75, 75-85 and >85. We investigated whether sex and age play a significant role in skin diseases. Season may also affect the skin. In winter, xerosis increases and this may cause pruritis and eczematous changes. Therefore, we also found out whether seasons play a significant role in skin diseases. The first COVID infection was reported on 11.03.2020 in Turkey and since then the population referring to outpatient clinics has changed. We revealed whether there is a significant difference between the results before and after COVID-19 infections.

All procedures carried out in studies involving human participants were in accordance with the ethical standards

of the institutional (Acibadem University-decision no: 2022-04/07, date: 25.02.2022) and/or national research committee, and with the 1964 Helsinki Declaration and its later amendments or comparable ethical standards.

Statistical Analysis

Data obtained were analyzed using SPSS 24 software (IBM Corp, Armonk, NY). During the evaluation of study variables, descriptive statistical methods (mean, standard error, rate) were used. Data were analyzed using Student's t-test, Mann-Whitney U tests chi-square test and Fisher's Exact tests as appropriate. A value of $p<0.05$ was considered as statistically significant.

RESULTS

There were 677 patients in the study; 310 (45.8%) of them were male and 367 (54.2%) were female (Table 1). The mean age of the male patients was 73.45±6.58 median 72 (65-94) and the mean age of the female patients was 72.53±6.27 [median 71 (minimum-maximum 65-91)]. There wasn't a statistical difference between the mean age of female and male cases. In all patients, the most frequently seen 10 diseases were seborrheic keratosis (15%), basal cell carcinoma (BCC) (13%), eczematous dermatitis (9%), actinic keratosis (AK) (8%), human papilloma virus (HPV) related lesions (5%), drug reactions (3.5%), Bowen (3%), squamous cell carcinoma (2.7%), lichen plan (2.7%) and bullous pemphigoid (2.2%). We divided the results into 12 groups (Table 1).

The most common disease in all patients were benign cutaneous neoplasms (23%), followed by eczematous diseases (18.5%), and epithelial cutaneous cancers (16.8%). The most common group among the female patients was group 5 (24.6%), followed by group 7 (16.9%), and group 2 (15%) respectively. The most common group among the male patients was group 2 (22.6%), followed by group 5 (21.9%) and group 7 (16.8%) respectively (Table 1). In group 2, the most common disease was contact dermatitis (18%); in group 5, seborrheic keratosis (65%), in group 6, AK (72%), and in group 7, BCC was the most common lesion (71%).

When we divided the ages into 3 groups 65-74,75-84, >85, the most common disease was group 5 (22%), followed by group 5 (26.3%) and group 2 (22.2%) respectively. When the data before and after the COVID-19 pandemic were analyzed, it was seen that there was no significant difference between the female and male patients (p=0.274). The mean age during the COVID-19 pandemic was 73.00, whereas it was 72.64 before the pandemic. This shows that there is no statistically significant difference in terms of the mean age. When we analyzed the seasonal effects, there was no statistically significant difference between the female and male patients (p=0.483) Before the COVID-19 pandemic, the most common result was group 2 (21.3%), followed by group 5 (20.4%) and group 7 (16.7%), and during the COVID-19 pandemic, the most common result was group 5 (28.4%), followed by group 7 (17.1%), group 6 (14.9%). When we looked into seasonal effects, the most common diseases

Table 1. Groups and male, female biopsy results

		Male		Female	
Group		Frequency	Percent	Frequency	Percent
1	Urticaria, erythemas and purpuras	23	7.4	26	7.1
2	Papulosquamous and eczematous diseases	70	22.6	55	15.0
3	Infectious diseases	29	9.4	21	5.7
4	Rheumatologic diseases and alopecia	8	2.6	15	4.1
5	Benign cutaneous neoplasms	68	21.9	88	24.0
6	Precanserous lesions	26	8.4	50	13.6
7	BCC, SCC	52	16.8	62	16.9
8	Cutaneous metastasis and other skin cancers	14	4.5	23	6.3
9	Pigmentation disorders	5	1.6	7	1.9
10	Pschyco related dermatological disorders	4	1.3	7	1.9
11	Granuloumatous dermatitis	4	1.3	4	1.1
12	Bullous dermatitis	7	2.3	9	2.5
	Total	310	100.0	367	100.0

BCC: Basal cell carcinoma, SCC: Squamous cell carcinoma

were in group 5 (24.1%) in winter, group 2 (21.6%) in spring, group 5 (30.0%) in summer, group 2 (18.9%) in autumn.

DISCUSSION

The geriatric population is increasing day by day. Nevertheless, the dermatologic diseases of geriatric patients are still a less researched area. To our knowledge, there is no study on skin biopsy results. Studies from Turkey show that eczematous diseases are the most common disease in the geriatric population (6-8).

The results of our study illustrate that the most common disease is a benign cutaneous neoplasm. In outpatient clinics, a dermatologic examination is enough for the diagnosis of most of the diseases. Eczematous dermatitis, pruritus, fungal infections are the most common diseases in the elderly population, but they rarely require biopsy for diagnosis (9,10).

In our study, benign cutaneous neoplasms accounted for 23% of all cases. Grover and Narasimhalu (11) investigated 200 elderly patients and 537 (74.5%) benign cutaneous neoplasms. Liao et al. (9) reported benign tumors 12.8% in a study from Taiwan. Yaldiz (7) reported benign tumor 7.19%. Yalçin et al. (6) reported 1.7% benign cutaneous neoplasms. Seborrheic keratosis in 15% of the study population and 65% of the benign cutaneous neoplasms in our study. Grover and Narasimhalu (11) reported 43% seborrheic keratosis. Cvitanović et al. (12) reported 18.9% seborrheic keratosis in the elderly population. Our results were similar to Cvitanović et al.'s (12) study.

Seborrheic keratoses are very common benign neoplasms, and the incidence increases with age. It can be difficult to diagnose using the naked eye because it can resemble various lesions such as basal cell carcinoma, pigmented Bowen's disease, melanoma, common warts, and acanthosis nigricans. Dermoscopy increases the chance of accurate diagnosis and helps differentiate from malign neoplasms (13).

In our study, the most common group among the female patients was 5 while group 2 was the most common among the male patients. Liao et al. (9) found benign tumors more frequent in male patients than in female patients. Yaldiz (7) determined benign neoplasm 7.19%, female patients 7.78% and, male patients 6.67% and in Yalçin et al.'s (6) study, there was no significant difference between sex and the benign neoplasm (1.7%).

Makrantonaki et al. (14) discovered that benign neoplasms accounted for 20% of females and 14% of males. This appears similar to our results. Women place a higher value on their appearance and take greater care of their skin. The excess of women, in our opinion, is due to women's skincare habits (14).

In our study, the second most common group was eczematous diseases (18.5%). The findings of Yildiz's (8) study indicated that the most common disease in elderly patients was contact dermatitis (n=1380, 15.2%) whereas the study of Smith and Leggat (15) in southern Taiwan at a nursing home showed that dermatitis was the third (7.3%) common disease. Yaldiz (7) found that eczematous dermatitis was the most common skin disease (24.3%) in his study from Turkey. Grover and Narasimhalu (11) found eczema 39% in the elderly population in his study from Bangalore. In addition to these studies, Thaipisuttikul (16) found eczema 22.8% in their study from Bangkok, and Yalçin et al. (6) found 20.4% in their study from Turkey. Our results were similar to Yalçin et al.'s (6) results.

Epidermal barrier function deteriorates with age. A washing product not irrits at a younger age may easily become irritant at an older age. The immune system changes with age, and Th1 decreases and Th2 dominance makes the person more allergic. Dryness, a common condition in older skin, facilitates itching and facilitates contact dermatitis. The comorbidities and systemic diseases increase at advanced ages. Because of these conditions, patients must use multiple drugs. These drugs may cause reactions or make the skin dry, and thus eczema may occur easily. Generally, in outpatient clinics, physicians give treatments without taking biopsy. Therefore, eczematous disease belongs to the second group (17).

In our study, cutaneous epithelial neoplasms were the third most common group (16.8%) and BCCs were the most common malignant tumor (71%). The frequency was 42.7% in women and 57.3% in men. The difference was not statistically significant. BCCs are the most common skin cancers, accounting for 70%-80% of non-melanoma skin cancers (18). According to the study of Kumar et al. (10), skin cancers account for 5.2% of all cases, and they point out that the frequency may be low in their country because of the Fitzpatrick skin type 4 and 5. Smith and Leggat (15) reported only one BCC (0.3%) in their study and they mentioned that BCC rates are rare in Taiwan. Liao et al. (9) reported 29.8% BCC in their study from Taiwan. Makrantonaki et al. (14) found epithelial skin cancers 13.3% in the female, and 34% in the male population. Yalçin et al. (6) found 5.2% and Yaldiz (7) found 9.2% precancerous and malignant skin neoplasias from Turkey (10). Since the patients in our study had biopsies and the reports in the other studies were from outpatient clinics, our results were higher than theirs. Life expectancy

has increased worldwide, and BCC cases are increasing with age. Additionally, the cumulative effect of the sun and the decrease in DNA repair capacity facilitate the formation of skin cancers (19). When we analyzed the relationship between season and skin diseases, we found that benign cutaneous neoplasms (24.1%) were most common in winter, eczematous dermatosis 21.6% in spring, benign cutaneous neoplasms (30%) in summer and eczematous dermatosis 18.9% in autumn. Especially in winter, dryness of the skin increases and we expect eczematous diseases to be seen more in the wintertime. Yaldiz (7) and Yalçin et al. (6) reported similar findings: in the winter, the most common diseases were eczematous diseases, xerosis, and pruritus, while in the summer, fungal infections were the most common. Since we reported on biopsy reports in the past, our findings do not reflect the true prevalence of diseases. Therefore, we were unable to find a link between the season and the biopsy results.

Especially in the first months of COVID-19 pandemics in our outpatient clinics, the number of patients decreased. Patients went to policlinic only in emergencies. When we investigated whether there was a difference in the results before and after the pandemic, we found that after the COVID-19 pandemic, the most common groups were group 5 (28.4%), group 7 (17.1%) and group 6 (14.9%). The eczematous group was the most common group before the pandemic. However, the percentage of the precancerous group increased after the pandemic. In this group, 72% of the lesions were AK (20). Templier et al. (20) reported that skin cancers accounted for 4.9% and 1/3 of the cases and their study group had AK. Makrantonaki et al. (14) found precancerous skin lesions 6.7% in the female population and 20% in the male population.

AK has a worldwide prevalence of 11%-25%. When individuals above 70 years were observed, this rate increased to 34.1% and 18.2% in men and women, respectively. At 60-69 years of age, the rates were 83% and 64%. In our study, AK was 30.9% in women and 69.1% in men. This discrepancy between the genders has been attributed to the differences in sun exposure (21).

The main causative agent of AK is UV radiation. With UV, DNA damage, free reactive oxygen species, inhibition of p53 may cause AK. AK also occurs frequently in immunosuppressant patients such as organ transplant patients and patients with HIV/AIDS. And HPV infection may have a related to AK (21).

CONCLUSION

Aging changes our skin. Therefore, the geriatric population suffers from various skin diseases. Besides, they face challenges such as multiple drug use, comorbidities, mobility problems and cognitive disorders. Knowing about the frequency of skin diseases is critical for the early detection of precancerous and cancerous lesions. The dermatologic diseases of geriatric patients are still a less researched area, therefore, close collaboration between geriatricians and dermatologists, as well as additional research, is crucial for the early diagnosis and treatment of skin cancers.

ETHICS

Ethics Committee Approval: The study was approved by the Acibadem University Ethics Committee (decision no: 2022-04/07, date: 25.02.2022).

Informed Consent: Retrospective study.

Authorship Contributions

Concept: D.B.Ö., Y.O., Design: D.B.Ö., G.E., Y.O., Data Collection or Processing: D.B.Ö., G.E., Z.T., D.D., Ö.T., Analysis or Interpretation: D.B.Ö., Y.O., Literature Search: D.B.Ö., G.E., Writing: D.B.Ö.

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